AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. **(Original)** A vertical cavity surface emitting laser for emitting light having a wavelength, comprising:

a substrate;

an active region adjacent said substrate;

a first mirror between said active region and said substrate; and

a second mirror adjacent said active region, said active region being between said second mirror and said first mirror; and

an ion implanted spatial region that extends into said active region;

wherein said second mirror includes an oxide insulating region; and

wherein said first mirror and said second mirror are separated by an optical path length of least one wavelength.

2. **(Original)** The vertical cavity surface emitting laser of claim 1, wherein said active region has at least one quantum well.

3. **(Original)** The vertical cavity surface emitting laser of claim 1, wherein said oxide insulating region and said ion implanted spatial region confine current flow through a center of said ion implanted spatial region.

4. **(Original)** The vertical cavity surface emitting laser of claim 1, wherein said ion implanted spatial region is concentrically aligned with said oxide insulating region.

5. **(Original)** The vertical cavity surface emitting laser of claim 1, wherein said oxide insulating region has an optical path length of less than ¼ wavelength.

6. **(Original)** A vertical cavity surface emitting laser for emitting light having a wavelength, comprising:

a substrate;

an active region adjacent said substrate;

a first mirror between said active region and said substrate; and

a second mirror adjacent said active region, said active region being between said second mirror and said first mirror, said second mirror including a high aluminum content layer having an aluminum concentration sufficient for oxidizing the second mirror; and

an ion implanted spatial region that extends into said active region;

wherein said aluminum content layer is oxidized into an oxide insulating region; and

wherein said first mirror and said second mirror are separated by an optical path of at least one wavelength.

7. **(Original)** The vertical cavity surface emitting laser of claim 6, further including a first spacer between said first mirror and said active region, and a second spacer between said active region and said second mirror.

8. **(Original)** The vertical cavity surface emitting laser of claim 7, wherein said oxide insulating region extends into said second spacer.

9. **(Original)** The vertical cavity surface emitting laser of claim 6, wherein said substrate is doped with an n-type dopant.

10. **(Original)** The vertical cavity surface emitting laser of claim 6, wherein said active region has at least one quantum well.

11. **(Original)** The vertical cavity surface emitting laser of claim 6, wherein said oxide insulating region and said ion implanted spatial region confine current flow through a center of said ion implanted spatial region.

12. **(Original)** The vertical cavity surface emitting laser of claim 6, wherein said ion implanted spatial region is concentrically aligned with said oxide insulating region.

13. **(Original)** The vertical cavity surface emitting laser of claim 6, wherein said oxide insulating region has an optical path length of less than ¼ wavelength.

14. **(Withdrawn)** A method of forming a vertical cavity surface emitting laser, comprising:

forming a first electrical contact on a substrate;

forming a first mirror structure on the substrate;

forming a first spacer on the first mirror structure;

forming an active region on the first mirror structure;

forming a second spacer on the active region;

forming a second mirror on the second spacer, wherein the second mirror includes an aluminum content layer having an aluminum concentration sufficient for oxidizing the second mirror;

forming a conduction layer over the second mirror;

forming a cap layer over the conduction layer;

forming a second electrical contact on the cap layer;

oxidizing the high aluminum content layer to form an oxide layer; and

ion implanting at least part of the active region under the oxide layer;

wherein the first mirror and the second mirror are at least one wavelength apart along an optical path.

15. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein forming the active region produces a quantum well.

16. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein oxidizing the aluminum content layer produces an annular shaped oxide layer.

17. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein ion implanting produces non-radiative centers in the active region.

18. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein forming the second electrical contact includes forming an opening for light emission.

19. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein the oxide layer is formed less than ¼ wavelength thick.

20. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein the oxide layer is formed in concentric alignment with implanted ions.

21. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein the aluminum concentration is above 97%.

22. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein the first spacer is a lower spacer.

23. **(Withdrawn)** The method of forming a vertical cavity surface emitting laser according to claim 14, wherein the second spacer is a top spacer.

24. **(Withdrawn)** The vertical cavity surface emitting laser of claim 6, wherein the aluminum concentration is above 97%.